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SET OF ELEMENTS FOR FORMING FURNITURE FOR
VISUAL DISPLAY PRESENTATION, FURNITURE AND
PACKAGING ASSEMBLY FOR SAID SET

The present invention relates to a Set of units enabling to set up a light display element furniture, the furniture itself and packaging for the latter dismantled set, for example with its display element.

- 5 This furniture enables to show information inside a room using display tools such as posters or similar equipment.

The EP-A-768 684 document describes light poster display furniture.

- 10 We must also mention US-A-4 700 498, US-A-1 870 798 and US-A-2 005 134 documents.

In practice, it has been shown that such furniture could not be assembled easily or quickly enough, for certain uses.

Often, the great number of parts and their apparent interchangeability can cause assembling errors.

In order that such furniture can display posters of cross sizes and varied elevation, different X-elevation or display element hooking structure tubes with sizes corresponding to future posters must be produced and supplied.

Also, EP-A-768 684 document X-structure bending strength, although well suited to pressure applied to the poster, is insufficient to enable hooking up heavier display elements. Thus, envelope-type display elements enabling to offer leaflets, cannot be presented with this kind of furniture.

Similarly, existing light furniture cannot be adapted to receiving accessories such as lights, sound appliances, or similar equipment. The display element should also be able to be installed on furniture without previously having to stick tubes or similar equipment to the latter.

Also, the base of such furniture should cover the smallest amount of ground space possible, while being at least as stable.

Other types of display element furniture are known.

Thus, the FR-A-2 725 543 document describes kakemono or similar equipment display furniture. The furniture includes a flexible bar whose lower part is embedded into a base and its upper part includes a notch used to hang the kakemono.

This kind of furniture is quite heavy. The weight, of its base in particular, is for example about 15 kilograms. This makes its handling and transport fastidious.

This furniture is also not suited to postal dispatching.

Also, because of their display function, it is advisable for the furniture to have technically useful components, that can be seen as little as possible, or whose structure looks as appealing as possible.

5 Whereas there is still strong demand nowadays that cannot be met for cheaper furniture offering solutions to abovementioned problems.

The present invention notably aims to solve these drawbacks.

10 It aims, amongst other things, to offer a stable, light, easily and quickly assembled display furniture, that can be adapted more easily to a varied-size display element.

Thus, the first invention object is a set of units required to assemble a light display element furniture, under slight elevation pressure, as defined in Claims.

15 According to the present invention, the base only uses one ground support area, sometimes none.

A second present invention object is a light display element furniture, combining a display element and a Set of units, according to Claims.

20 A third present invention object is a packaging that includes a container such as, for example, a cylindrical cardboard tube comprising a Set of units and/or a dismantled furniture, according to Claims.

25 Other invention characteristics are taken from the description herebelow and refer to Figures in appendix as follows:

- Figure 1 is a three-quarter back elevation angle schematic view of how to assemble furniture according to a present invention's assembling method;

5 - Figure 2 is a front elevation schematic view of figure 1 furniture;

- Figure 3 is a back elevation schematic view of figure 1 furniture;

10 - Figure 4a is a three-quarter back elevation angle schematic view of how to assemble hooking devices according to the present invention;

- Figure 4b is a side elevation schematic view of figure 4a hooking devices;

- Figure 5 is a front schematic view of other display element-linked hooking devices;

15 - Figure 6 is a three-quarter back elevation angle schematic view of how to assemble the binding item according to the present invention;

- Figure 7 is a side elevation schematic view of how to assemble the base according to the present invention;

20 - Figure 8 is a top schematic view of the Figure 7 base;

- Figure 9 is a side elevation schematic view of how to assemble the upper linking devices according to the present invention;

25 - Figure 10 is an elevation angle schematic view of how to assemble an elevation structure according to the present invention, before assembling;

- Figure 11 is an angle schematic view of a packaging set according to the present invention;
- Figure 12 is a partial longitudinal elevation view of how to assemble a base and its two opposite lengthways branches with no own support devices, a mechanism being planned in the single reception case of a flexible elevation structure, with an anchor valve in the case and flexible item stopper, as well as this flexible item's elastic quick extraction return unit;
- Figure 13 is a partial top view of the Figure 12 base;
- Figure 14 is a partial elevation back cross angle schematic view of how to assemble furniture equipped with a removable display element lighting system;
- Figure 15 is a longitudinal elevation section view of how to assemble a front single-branch base with a metal ballasting/hardening insert in a moulded casing made of synthetic material such as acrylonitrile butadiene styrene or " ABS ";
- Figure 16 is a top angle view of the Figure 15 base;
- Figures 17 to 19 show, via a longitudinal elevation, how to assemble linking devices or dual-side support elements in synthetic material found in the upper display element hooking area. Figure 17 shows this support with strip board female parts assembled by hooking them onto support spigots;
- Figures 20 and 21 are respectively end cover longitudinal, then cross sections;

- Figures 22 to 24 are similar to figures 17 to 19 and show linking or first support side devices, so figure 22 only shows one strip board female part;

5 - Figure 25 is a longitudinal cross drawing schematic view of how to assemble strip board end plug hooking devices according to the present invention;

- Figure 26 is a longitudinal elevation cross section of the figure 25 plug, showing the shape of this plug's elastic clipping straps at one strip board cross end;

10 - Figure 27 is a longitudinal elevation view of the plug in figures 25 and 26; and

15 - Figure 28 is a longitudinal elevation cross section of strip board assembling with tightening via an insert that is part of display element support, via tightening, equipment and with a complementary cavity.

On the Figures, mutually octagonal L, T and E directions are shown.

L is the side direction, T is the cross direction and E is elevation direction.

20 They define the main directions chosen to describe the present invention. These directions can turn any way in the given space.

25 In the assembled furniture description, L direction corresponds to a depth of furniture seen from the front, as in figure 2. Whereas T direction corresponds to its width. E direction is its height and is substantially vertical.

L and T directions therefore define a drawing that is considered to be parallel to a support drawing on which the furniture rests, in display position.

5 The support drawing is then substantially horizontal for the ground, for example.

L, T and E directions are separate unit references used to ease the description of furniture assembly directions.

10 Please note that the terms " lower " or " low " and " upper " or " high " are used according to the E elevation direction, respectively as showing a location directed towards the ground and opposite ground.

Whilst, the terms " in front " or " front " and " back " show an L side direction.

15 Element set 1, according to the present invention, is used, with a display element 2 notably, to set up a light display furniture 3 for the aforementioned display element 2.

Furniture 3 is assembled without tools, using set 1 elements.

Element set 1 includes a combination of the following:

- 20
- hooking elements or devices 4 to display element 2;
 - a base 5;
 - one or several flexible structure items 6;
 - upper linking devices 7, here seen as a single element.

25 According to assembling method, display element 2 is a poster 8 including two cross edges 9, 9a and two edges 10,

stretching in the E elevation direction respectively substantially parallel two by two.

Poster 8 shows a visible front face 11 supporting information and a hidden back face 12 on the opposite side
5 of front face 11.

Poster 8 includes hooking devices 4 on each of its cross edges 9, 9a.

Hooking devices 4 include upper hooking devices 13 and lower hooking devices 14.

10 Here, these devices 13 and 14 are for example, hollow tube-shaped carbon fibre rods.

To present display elements 2 of various widths, according to T cross direction, only corresponding hooking devices 13 and 14 sizes must be changed.

15 For this assembly, such changes require to have the appropriate device 13 and 14 replacement size.

Upper hooking devices 13 are assembled on the poster 8 upper 9a cross edge.

20 These devices 13 have substantially equal cross sizes to poster 8 cross sizes.

They include a binding item 15 joining a rod-shaped item 16.

In figure 4b, binding item 15 has an open side section shape p defined by a shaft 17 and head 18.

25 This item 15 includes poster 8 first holding devices 19 and second holding devices 20 with rod-shaped item 16.

First holding devices 19 are found at shaft 17 level.

They enable true binding with poster 8.

These devices 19 are found as plane 21.

Plane 21 is delimited by a cross edge 22, which is here substantially parallel to poster 8 upper cross edge 9a and two E elevation edges 23 that are substantially parallel two by two.

This plane 21 is a binding area ready to be assembled by welding, sticking, stapling, or similar action, to poster 8 back 12.

On Figure 6, a slit 24 is opened all the way along cross edge 22.

Inside slit 24 are edges 25. These protrude towards inside slit 24, following L side direction, and lie facing each other, according to T cross direction.

Thus, the slit 24 receives poster 8 upper cross edge 9a. The latter is held together by elastic gripping or "clipping" via edges 25.

Plane 21 is prolonged according to E elevation direction at head 18 level by second holding devices 20.

Second holding devices 20 are shown as a flap 26. Flap 26 protrudes from poster 8 upper cross edge 9a.

Flap 26 stretches across and forms an open channel 27. Channel 27 is open at back 12 of poster 8. The channel 27 opening is pointed towards the ground, according to E elevation direction.

Channel 27 is ready to receive rod-shaped item 16.

An opening 28 is made in the middle of flap 26, equidistant from elevation edges 23.

This opening 28 is used for linking item 16 with upper linking devices 7.

5 Here, the item 16 is a synthetic, for example, carbon fibre cylindrical tube which lies across.

10 Lower hooking devices 14 are found on the poster 8 lower cross edge 9 level. They include a binding item 15 for poster 8 and a rod-shaped item 16 as described above, as well as support devices 29.

Support devices 29 are to stand on the ground. There are two here set at each cross end of the rod-shaped item 16.

15 Each support devices 29 is a part 30, notably perpendicular to the cross direction T, rounded, for example a cross axis wheel, in figure 1.

20 While assembling, devices 29 are ready to lengthen devices 14 to adapt the furniture 3 cross T size to display element 2. Thus, with only one devices 14 hollow tube and extension devices 29, the same furniture 3 can offer various display element 2 cross sizes.

Devices 14 are linked to base 5, notably via a rod-shaped item 16.

Base 5 is mainly extended according to L side direction, perpendicularly to devices 14.

25 It has a general head shape 31, the long longitudinal 32 part of head shape 31 is set next to devices 14.

This part 32 includes here two parallel pieces 33, extending sideways towards the devices 14.

When performing figure 12 to 28, base 5 is a single unit, for example from a synthetic and/or light metal mould, like aluminium.

These side parts 33 include linking devices 34 lower than devices 14 at their end next to devices 14.

Lower linking devices 34 are hook-shaped 59. The latter is linked with item 16 at opening 28 of flap 26, and its cavity enables to support item 16, when display element 2 is taut.

On the right of the curved part 31a of head 31, lower cross face 36, which rests on ground, is support device 35 for the base. Here, support 35 is a single support area 58 for base 5.

Curved part 31a also includes, on its upper face 37 which here is longitudinal in the direction of E elevation, opposite lower cross face 36, fastening devices 38 for flexible structure item 6.

Fastening devices 38 include one or several cases 39 opening upwards substantially according to E elevation direction.

In figure 7, there are four cases 39.

These cases 39 have sections that are substantially perpendicular to E elevation direction and different from one another.

More precisely, these cases 39 are lined up behind one another according to L side direction. Their sections are increasing areas from front to back, from lower linking

increasing areas from front to back, from lower linking devices 34 to the opposite end of head 31. Thus, case 39 of the smallest section is closest to these devices 34.

Each case 39 has a substantially additional section to one from a lower end 40 of a predetermined flexible structure item 6 which it will receive.

This enables to easily and quickly determine the flexible structure item 6 side position with base 5 and thus avoid furniture 3 assembling errors.

This position also guarantees that poster 8 is subjected to maximum stress, according to item 6 height.

Flexible structure item 6 is ready to form an elevation structure 41, alone or by assembling one or several other flexible structure items 6.

Elevation structure 41 is flexible enough to allow slight bending in relation to the E elevation direction. This side bending forward defines stress exerted on display element 2. Structure 41 is however harder than known X elevation structures and thus enables to keep heavy display elements 2 under stress.

Flexible structure item 6 is in figure 10, a flat-cone shape tube 44, whose great section which is perpendicular to E direction, is on the base 5 side. Lower and upper ends 40, 42 of item 6 respectively have assembling devices 43 to link them to the other items 6.

Figure 10 items 6 are synthetic, for example in carbon fibre. More precisely, these items 6 are obtained by winding round carbon fibre hardened by coating.

Here, assembling devices 43 are male/female, enabling interlocking of tubes 44, 44a one after another to form an elevation structure 41.

5 In figure 10, devices 43 include a male section 45 protruding from tube 44 at its lower end 40, and a female case 46 fitting male section 45 end, at tube 44a upper end 42.

Here, male section 45 has a substantially cylindrical shape.

10 Elevation 41 structure length, and thus the number of assembled items 6, is chosen according to displayed poster 8 elevation size.

When assembling, structure 41 is made up of three or four items 6 set end to end.

15 Each item 6 offers a flat-cone section at lower end 40, with a different size, so that when items 6 are interlocked into each other they form a profiled structure 41 following E elevation direction, and generally look like a cane.

20 The lower end 40 of such a structure 41 therefore offers a section which is perpendicular to E direction and covers a greater area than upper end 42.

Each lower end 40 is thus suited to be assembled in a precise base 5 case 39, of complementary size, without play and side or cross stress. Thus, there can be no confusion in choosing the appropriate case 39 to set elevation structure
25 41 to base 5.

This assembled equipment is easy to dismantle as it is assimilated to a sliding guidance according to E elevation direction. A structure 41 position in relation to base 5 is

determined by its lower end 40 stop at the bottom of the corresponding case 39.

Thus formed elevation structure 41 upper end 42 joins upper linking devices 7. In fact, these devices 7 are assembled on structure 41 end 42 by pushing them together tightly enough to ensure that they will remain tight after exerting stress on display element 2.

These devices 7 have a substantially cylindrical shape and are located at the flap 26 middle opening 28.

10 The longitudinal axis of the cylinder defined by linking devices 7 is thus substantially sideways and perpendicular to poster 8 upper cross edge 9a.

On one hand, these devices 7 have upper end 42 fixing devices 47 near poster 8 back protruding end 12.

15 See these devices 47 in figure 9 which are a substantially long case 48 according to E direction. Case 48 opening 49 is then set according to E elevation direction downwards, or towards base 5.

20 On the other hand, upper linking devices 7 offer a flat bevelled section 50 sideways on display element 2 front 11. Section 50 leans to the opposite side of base 5, front to back and from bottom to top. Thus, flat section 50 is substantially mixed with display element 2 front 11.

25 In its central area, this section 50 includes fixing devices 51 to upper hooking devices 13. Here, these devices 51 are a gutter-shaped notch 52, crossing and parallel to poster 8 upper cross edge 9a.

This gutter 52 is ready to receive rod-shaped item 16 and to keep it set on devices 7 by elastic gripping or similar means.

5 In figure 5, poster 8 has at least one cross hem 53 on one of its cross edges 9 or 9a.

This hem 53 forms a kind of closed tube ready to receive rod-shaped item 16 in its concavity, by sliding it across. Hem 53 is usually sealed across via sticking, stitching, stapling, heat-gluing or similar means.

10 When assembling, poster 8 includes a cross hem 53 at each of its cross edges 9 or 9a.

Assembling furniture 3 is now described.

15 First, display element 2 is assembled using hooking devices 4, upper hooking devices 13 are assembled on upper cross edge 9a and lower hooking devices 14 are assembled on lower cross edge 9.

Devices 13 rod-shaped item 16 is then slid crossways into binding item 15 and into as well as held by gutter 52 of upper linking devices 7.

20 Devices 14 rod-shaped item 16 is also slid thus into binding item 15 and into as well as held by lower linking devices 34 of base 5. Support devices 29 are set at each cross end of item 16.

25 If required, according to display element 2 elevation size, elevation structure 41 is formed by assembling several flexible structure items 6.

Structure 41 lower end 40 is then set into an appropriate base 5 case 39, and its upper end 42 into upper linking devices 7 case 48.

5 Assembling elevation structure 41 to the rest of the unit comprising display element 2 requires bending the whole unit and particularly bending display element 2.

This bending causes elevation structure 41 to bend slightly sideways forward and its upper end 42 slightly in elevation direction towards the ground.

10 Once freed, the unit comprising display element 2 is trapped between upper linking devices 7 and lower linking devices 34. Structure 41 tends to straighten itself up and regain an elevation position because of its flexibility and causes display element 2 to be subjected to stress. While devices
15 29, which stand on the ground, ensure cross stability for furniture 3 joining base 5 support devices 35, which stabilise it sideways.

In thus assembled furniture 3, display element 2 is assembled and kept taut by elevation structure 41 pressure
20 joining support devices 29 and 35. This pressure is exerted upwards in elevation and also slightly sideways back.

Trihedral division of support devices 29 and 35 provides assembled furniture 3 with excellent stability, whatever the size of display element 2. Thus, furniture 3 rests
25 isostatically on the ground.

Also, floor space used is minimal due to free area left by cross bar and side shaft T-shape, defined by devices 14 and base 5. This eases lay-out of several furniture 3, placed next to each other. For example, back ends of several bases

5 can be placed side by side, together with several neighboring display elements 2, in order to form a continued and multi-faced display.

5 In figure 2, display element 2 is a flexible panel with envelopes 60 ready to contain leaflets or similar equipment.

Display element 2 can be made of cellulose-type material like paper and/or synthetic material, such as PVC, polyester or similar woven or unwoven material.

10 Each element of set 1 furniture 3 and its display element 2 is easily dismantled and carried in packaging unit 54 shown in figure 11.

Here, this unit 54 includes a cylindrical cardboard tube 55 whose size is suited to receive element set 1 and display element 2.

15 Unit 54 also herewith includes a shoulder strap bag 56 in synthetic canvas, with end cap 57, sealable via a peripheral zip. Tube 55 is housed in bag 56 to carry furniture 3 over your shoulder.

20 Dismantled elements 1 and display element 2 are slid inside tube 55 and thus form a compact and light bundle. As a result, unit 54 is thus light-weight, easily carried and sent by post.

25 We shall now describe how to assemble the present invention as shown in figures 12 to 28. In these figures, contents with identical or similar uses as those described previously have the same reference numbers.

Shown in figure 12, is how to assemble base 5 in two parts 32 or with longitudinally opposed branches.

This base 5 does not have its own support equipment.

5 A mechanism 57 is set in flexible elevation structure 6 single reception case 39, with a flexible item and anchoring piston 60 in the latter case, as well as an elastic quick extraction element 61 of flexible item.

10 Thus, you must slide item 6, following E direction from top to bottom, into case 39 and piston 60, push lightly in the same direction to fix firmly the piston 60 and item 6 into notches 62, inside complementary hollows 63, against the pressure from bottom to top of item 61, here a spring. Then, notches 63 hold the piston 60 and item 6 unit jointly onto base 5.

15 When dismantling for example, in order to free structure 6 from base 5, if you exert slight pressure, similar to when assembling, notches 62 are loosened and spring 61 pushes and frees structure 6 upwards.

In figure 13, which is a partial top plan view of figure 12 base 5, you can clearly see the long cross shape of lower linking devices 34.

20 Here, these devices 34 form a substantially prismatic branch with a rectangular base projected in a plan which is perpendicular to E direction, with a large main base which is substantially parallel to T direction.

25 As can be seen in figure 12, this devices 34 branch leans from top to bottom in relation to L direction, from case 39 to part 32 external longitudinal end, where the latter branch is located.

Please note that base 5, except for the added parts from its mechanism 57, is a single, moulded, synthetic unit with two longitudinally opposed branches 34.

Here, base 5 does not have its own support devices and has two long parts 32, lined up and substantially longitudinally opposed on each side of flexible structure 6 fixing devices 38. Each long part 32 has lower linking devices 34 for front and back lower hooking devices 14, with proper quadrilateral ground support devices 29.

In figure 14, which is a partial elevation back cross angle schematic view of present invention assembling method, furniture 3 is equipped with a removable display element 2 lighting system 64.

This system 64 includes the following:

- a removable power supply cable 65, with a transformer 66, linked to base 5;
- two base conductive rods 67, linked to structure 6 by cables 68 assembled on structure 6; and
- a light source 69, here a low voltage halogene bulb.

System 64 components can be easily dismantled from furniture 3 specifically, and easily stored in a packaging unit, like unit 54, shown in figure 11.

In figure 15, you can see a longitudinal elevation section of how to assemble a single or branch 32 front base 5, with a metal ballasting and hardening insert 70. A moulded casing 71, made of synthetic material such as acrylonitrile butadiene styrene or " ABS ", is covers insert 70.

Figure 16 is a top angle view of figure 15 base 5.

Figures 17 to 19 show, via a longitudinal elevation, how to assemble synthetic linking or dual-side support elements 7, which are part of upper display element hooking devices 13.

5 Figure 17 shows this support with binding items or strip board female parts 15 assembled by hooking them onto support spigots 72.

10 Figures 22 to 24 are similar to figures 17 to 19 and show link or first support side devices 7. Figure 22 therefore only shows one strip board female part 15.

Figures 20 and 21 are respectively longitudinal, then cross sections of end cover 73 which is ready to be assembled as shown in figure 13, onto structure 6 upper end, as part of upper link devices 7.

15 Figure 25 is a longitudinal cross drawing schematic view of a hooking devices 4 strip board cross end plug 74 according to the present invention. For a lower hooking devices 14 strip board, this plug 74 makes up one of the support devices 29.

20 In figure 26, the figure 25 plug 74 shows the shape of this plug's elastic gripping straps 75 ready to be assembled at one strip board cross end.

In figure 27, plug 74 has two straps 75, with one on bottom of the other in elevation direction.

25 Upper strap 75 is bent in relation to L longitudinal direction, from top to bottom from back to front, and lower strap 75 shows a "C"-shaped open section in a perpendicular drawing to T direction.

Finally, Figure 28 shows a longitudinal elevation cross section of strip board assembling with tightening devices 23, via insert, being part of display element 2 hooking devices 13 or 14, via tightening, and with a cavity 56 which
5 is complementary to a back spigot 72.

Please note that when looking at figures 26 and 28 (which have inverted top and bottom directions in relation to each other), external perimeters, perpendicular to strip board devices 23 and plug 74 T direction are close, if not merged.